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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/024,783

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Henricus Franciscus Johannus Jacobus Van Tongeren

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS

P.O. BOX 3001

BRIARCLIFF MANOR, NY 10510

EXAMINER

MACCHIAROLO, PETER J

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 01/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/024,783

Applicant(s)

VAN TONGEREN ET AL.

Examiner

Peter J. Macchiarolo

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 04 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,4-8,10,11,13,14,17 and 21-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-8,10,11,13,14,17 and 21-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Amendment*

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn. However, pending claims 1, 4-8, 10, 11, 13, 14, 17, and 21-28 are not allowable as explained below.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1, 4, 5, 8, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over previously cited Schoo et al (USPN 6326091; "Schoo") in view of previously cited Hayashi et al (USPN 6806643; "Hayashi").**

Schoo discloses in figure 1, an EL device comprising a substrate (2) an organic EL layer (4) on the substrate an electrode (5) atop the EL layer the electrode comprising a metal (indium) having a melting point of 250°C or less.

Schoo is silent to the electrode being at least 500 nm thick.

However, Hayashi teaches in column 11 lines 16-36, that for proper resistively and operation in an EL device, electrodes made from low work function metals (such as indium) should be about 500 nm thick.

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Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct the device of Schoo with the electrode thickness of Hayashi to ensure proper resistivity and operation.

The Examiner notes that the claim limitation "pattern-wise ink-jet printed" is drawn to a process of manufacturing which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation has been considered, but not patentably distinct over Schoo and Hayashi (see MPEP 2113).

Regarding claim 4, Schoo shows the electrode is an electrode for supplying electrons to the EL layer.

Regarding claim 5, Schoo discloses the metal used is indium, which has a work function of about 4.1 eV.

Regarding claim 8, the Examiner notes that the limitation, "a battery operated or hand-held electronic device provided with the EL device of claim" is an intended use type limitation. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136

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USPQ 458, 459 (CCPA 1963). In this case, the preamble has been considered, however is not patentable over Schoo and Hayashi since using a battery operated or hand held electronic device with the EL device of claim 1 is an obvious configuration.

Regarding claim 14, Schoo discloses the metal electrode is made from indium which has a work function of about 4.1eV.

**Claims 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schoo in view of Hayashi in further view of previously cited Yudasaka et al (USPN 6541918; "Yudasaka").**

Regarding claim 6, Schoo and Hayashi teach the limitations addressed in rejected claim 1 and will not be repeated here.

Schoo and Hayashi are silent to a relief pattern.

However, Yudasaka teaches that relief patterns (step cutting insulating films) improve the accuracy and precision of a material on a surface when using an ink-jet manufacturing method, which in turn improves the overall quality of an EL device.

Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to manufacture the device of Schoo and Hayashi with the relief patterns of Yudasaka to improve the overall quality of the device.

**Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schoo in view of Hayashi in further view of previously cited Sturm et al (USPN 6087196; "Strum").**

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Regarding claims 7, Schoo and Hayashi are silent to the device being a passive matrix type including one or more EL layers sandwiched between row electrodes and column electrodes, and independently addressable EL elements being formed at crossings of row and column electrodes; and the row electrodes comprise a meal or metal alloy.

However, as is known in the art, Strum shows this configuration allows for a more robust device.

Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct the device of Schoo and Hayashi with the above configuration to allow for a more robust element.

**Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schoo in view of Hayashi in further view of Yudasaka in further view of Sturm.**

Regarding claim 17, Schoo, Hayashi, and Yudasaka are silent to the device being a passive matrix type including one or more EL layers sandwiched between row electrodes and column electrodes, and independently addressable EL elements being formed at crossings of row and column electrodes; and the row electrodes comprise a meal or metal alloy.

However, as is known in the art, Strum shows this configuration allows for a more robust device. The motivations and reasons for combining are the same as for rejected claim 7.

**Claims 10, 13, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schoo in view of Gao et al (US PG PUB 20020051893; "Gao").**

Regarding claim 10, Schoo discloses in figure 1 and column 12 lines 44-51 a method for manufacturing an EL device including a metal electrode provided in accordance with a desired pattern comprising forming one or more layers of organic EL material (4) on a surface (2) and subsequently applying via a pipette a molten metal (indium) in accordance with the desired pattern such that upon cooling of the molten metal, the metal electrode is formed atop the one or more layers of organic EL material.

Schoo is silent to ink-jet printing the molten metal electrode.

However, Gao teaches in [0058] and in the abstract that it is known in the art to form metal electrodes via an ink-jet process on top of an organic layer, and this method significantly simplifies the fabrication of an electroluminescence cell.

Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to manufacture the EL device of Schoo by ink-jetting the metal electrode, since this allows for deposition over a large area with high resolution and reduces total manufacturing time.

Regarding claims 13, Schoo discloses the metal used for the electrode is indium, which has a melting point below 250°C. Also, Gao teaches in [0058] the electrode alloy has a low melting point, of about 80°C. The reasons for combining and motivations are the same.

Regarding claim 22, Gao teaches in [0058] the electrode alloy has a low melting point, of about 80°C. The reasons for combining and motivations are the same.

**Claims 11 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schoo in view of Gao in further view of Yudasaka.**

Regarding claim 11, Schoo and Gao are silent to a relief pattern formed on the surface.

However, Yudasaka teaches that relief patterns (step cutting insulating films) improve the accuracy and precision of a material on a surface when using an ink-jet manufacturing method, which intern improves the overall quality of an EL device.

Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to manufacture the device of Schoo and Gao with the relief patterns of Yudasaka to improve the overall quality of the device.

Regarding claim 21, Yudasaka teaches that the relief patterns are formed by photolithography, indicating that they are made from a photoresist material. The motivation and reasons for combining are the same as for claim 11.

**Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schoo in view of Gao in further view of Applicant's admitted prior art.**

Regarding claim 23, Schoo and Gao are silent to ink-jet printing a selection layer on the surface.

However, as Applicant admits in the paragraph spanning pages 13 and 14, such selection layers and inks used for manufacturing these layers are known.

Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to ink-jet a selection layer onto the



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device of Schoo and Hayashi since the selection layer will increase the accuracy of the electrode's position and ink-jetting is a method that allows for very quick and accurate application over a large area.

Regarding claim 24, printing the selection layer on the surface using an other pattern that is complementary to the desired pattern is an obvious modification, since one skilled in the art will recognize the selection layer will not interfere with the electrode's overall resistance thereby simplifying electrical power calculations.

Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to manufacture the selection layer on the surface using an other pattern that is complementary to the desired pattern to simplify electrical power calculations.

Regarding claim 25, as Applicant admits in the first full paragraph of page 14, using a selection layer that comprises a photoresist layer is known in the art. The motivation and reasons for combining are the same as for claim 23 above.

Furthermore, since the Examiner agrees with Applicant's argument filed 04/21/2005 that claims 23-25 are not distinct and independent, the Examiner asserts such methods would have been obvious to one skilled in the art.

**Claims 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Schoo in view of Hayashi in further view of Applicant's admitted prior art.**

Regarding claim 26, the limitations have been addressed at claim 1 above and will not be repeated here.

Schoo and Hayashi are silent to ink-jet printing a selection layer on the surface.

However, as Applicant admits in the paragraph spanning pages 13 and 14, such selection layers and inks used for manufacturing these layers are known.

Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to ink-jet a selection layer onto the device of Schoo and Hayashi since the selection layer will increase the accuracy of the electrode's position and ink-jetting is a method that allows for very quick and accurate application over a large area.

Regarding claim 27, Schoo and Hayashi are silent to a selection layer.

However, printing the selection layer on the surface using an other pattern that is complementary to the desired pattern is an obvious modification, since one skilled in the art will recognize the selection layer will not interfere with the electrode's overall resistance thereby simplifying electrical power calculations.

Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to manufacture the selection layer on the surface using an other pattern that is complementary to the desired pattern to simplify electrical power calculations.

Regarding claim 28, Schoo and Hayashi are silent to a selection layer.

However, as Applicant admits in the first full paragraph of page 14, using a selection layer that comprises a photoresist layer is known in the art. The motivation and reasons for combining are the same as for claim 27 above.

### ***Response to Arguments***

Applicant's arguments filed 01/04/2006 have been fully considered but they are not persuasive.

Firstly, Applicant alleges Hu does not teach the electrodes being ink-jet printed and argues that Hu's electrode will not have Applicant's electrode characteristic natural-shaped electrode structure. The Examiner respectfully directs Applicant to MPEP 2112-2113, and makes of record selected passages below:

"The lack of physical description in a product-by-process claim makes determination of the patentability of the claim more difficult, since in spite of the fact that the claim may recite only process limitations, it is the patentability of the product claimed and not of the recited process steps which must be established. We are therefore of the opinion that when the prior art discloses a product which reasonably appears to be either identical with or only slightly different than a product claimed in a product-by-process claim, a rejection based alternatively on either section 102 or section 103 of the statute is eminently fair and acceptable. As a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art

products and make physical comparisons therewith.” *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

Once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983)

Furthermore, MPEP 716.01(b) discloses that the arguments of counsel cannot take the place of evidence in the record. *In re Schulze*, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965).

Since Hu’s electrode has been previously established as being only slightly different than Applicant’s electrode, and since no evidence has been submitted to support an unobvious difference, the Examiner maintains the final rejection of claims 1, 4-8, 14, and 17.

Secondly, Applicant argues that Fujii is silent to ink-jet printing the electrode on top of the organic layer. This is persuasive. However, it’s not patentable over US PG PUB 2002/0051893 to Gao et al as described above.

Thirdly, Applicant contends that while Applicant’s admitted prior art (AAPA) does indeed show activation layers and inks for preparing such layers are well known in the art, Fujii fails to teach an ink jet printing technique. The Examiner respectfully disagrees, and directs

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Applicant to column 11 lines 23-29 and lines 55-61 of Fujii, where ink-jet printing the many layers of a light emitting device is taught.

Even if arguendo, Fujii was silent to this feature, the Examiner asserts that since AAPA provides evidence that the recited material layers are known in the art to be formed into ink, the method of ink-jet printing these known layers would have been obvious to one of ordinary skill in the art, as evidenced by Sreeram et al (USPN 6361390).

### ***Conclusion***

Applicant's amendment filed 04/21/2005 necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J Macchiarolo whose telephone number is (571) 272-2375.

The examiner can normally be reached on 8:30 - 5:00, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar Patel can be reached on (571) 272-2475. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to be 'PJM', is located on the left side of the page.

  
**JOSEPH WILLIAMS**  
**PRIMARY EXAMINER**